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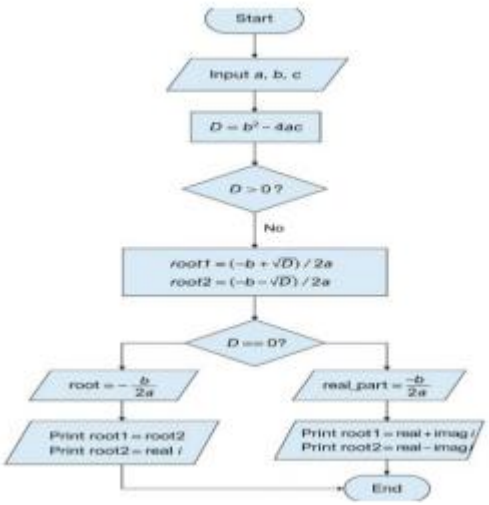
EX-2.1.1- ROOTS OF QUADRATIC EQUATION

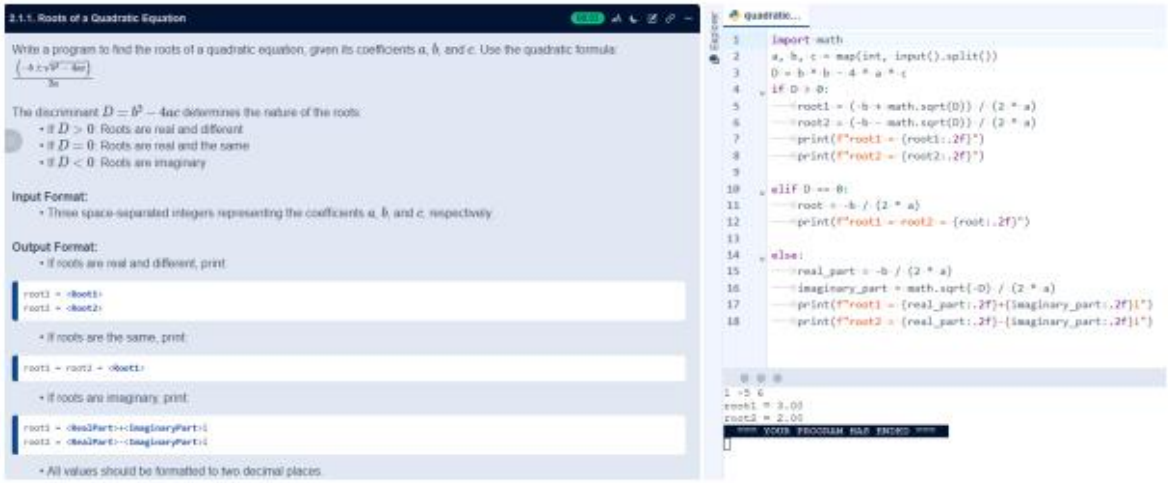
ALGORITHM

1. Start
2. Read the coefficients `a`, `b`, and `c`
3. Compute the discriminant:
   `D = b² - 4ac`
4. If `D > 0`
5. Calculate two real and different roots
6. `root1 = (-b + √D) / (2a)`
7. `root2 = (-b - √D) / (2a)`
8. Else if `D = 0`
9. Calculate one real and equal root
10. `root = -b / (2a)`
11. Else (`D < 0`)
12. Calculate real part: `-b

FLOWCHART:



CODE:



2.1.1. Roots of a Quadratic Equation

Write a program to find the roots of a quadratic equation, given its coefficients a, b, and c. Use the quadratic formula:

$\frac{\left(-b \pm \sqrt{b^2 - 4ac}\right)}{2a}$

The discriminant $D = b^2 - 4ac$ determines the nature of the roots:

- If $D > 0$: Roots are real and different
- If $D = 0$: Roots are real and the same
- If $D < 0$: Roots are imaginary

Input Format:

- Three space-separated integers representing the coefficients a, b, and c, respectively

Output Format:

- If roots are real and different, print:

```
root1 = <Root1>
root2 = <Root2>
```

- If roots are the same, print:

```
root1 = root2 = <Root1>
```

- If roots are imaginary, print:

```
root1 = <RealPart>+<ImaginaryPart>i
root2 = <RealPart>-<ImaginaryPart>i
```

- All values should be formatted to two decimal places.

quadratic...

```
import math
a, b, c = map(int, input().split())
D = b * b - 4 * a * c
if D > 0:
    root1 = (-b + math.sqrt(D)) / (2 * a)
    root2 = (-b - math.sqrt(D)) / (2 * a)
    print(f"root1 = {root1:.2f}")
    print(f"root2 = {root2:.2f}")

elif D == 0:
    root = -b / (2 * a)
    print(f"root1 = root2 = {root:.2f}")

else:
    real_part = -b / (2 * a)
    imaginary_part = math.sqrt(-D) / (2 * a)
    print(f"root1 = {real_part:.2f}+{imaginary_part:.2f}i")
    print(f"root2 = {real_part:.2f}-{imaginary_part:.2f}i")
```

```
1 -5 6
root1 = 3.00
root2 = 2.00
***** YOUR PROGRAM HAS ENDED *****
```